



STATE OF DELAWARE
**DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL**
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

Office of the
Secretary

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Secretary's Order No. 2006-A-0039

**Re: Approval and Certification of Delaware Reasonably Available Control
Technology State Implementation Plan under the 8-Hour Ozone National
Ambient Air Quality Standard**

Date of Issuance: **September 13, 2006**

Effective Date: **September 13, 2006**

Under the authority vested in the Secretary of the Department of Natural Resources and Environmental Control ("Department") under *29 Del. C. §§8001 et seq.*, and *7 Del. C. Chapter 60*, the following findings and conclusions are entered as an Order of the Secretary:

Based upon the record reviewed in the Hearing Officer's Report ("Report"), prepared by Ron Amirikian, dated August 21, 2006, a copy of which is appended hereto and incorporated herein, I find and conclude that the record supports approval in final form of the proposed "Delaware Reasonably Available Control Technology State Implementation Plan Under the 8-Hour Ozone National Ambient Air Quality Standard" ("Plan"). The Department held a public hearing on August 1, 2006, in order to receive public comments on the Plan. This hearing was held pursuant to the Environment Protection Agency's ("EPA") procedural requirements, and *60 Del. C. §6010(c)*.

The Plan essentially is a report and certification on Delaware meeting the federal air quality regulations in its State Implementation Plan in order to attain compliance with the ozone National Ambient Air Quality Standard ("NAAQS"). Delaware's air quality currently does not meet the ozone NAAQS, and the EPA's regulations require Delaware,

as a state within EPA's Philadelphia regional ozone non-attainment area, to require major stationary sources of Volatile Organic Compounds ("VOC") and nitrogen oxides ("NOx") emissions to be controlled by, at a minimum, by Reasonably Available Control Technologies ("RACT"). The Plan was prepared by experts within the Department's Air Quality Management Section, Division of Air and Waste Management in order to satisfy Delaware's responsibilities under the federal Clean Air Act, as amended.

The Hearing Officer's Report recommends approval of the Plan, which also certifies that all major stationary sources of VOC and NOX are controlled by at least VOC and NOx RACT. This Order hereby approves the proposed Plan as the final Plan and the certification in order that it may be submitted to EPA. The Plan demonstrates that Delaware has implemented RACT for VOC and NOx air contaminant emissions from major stationary sources. These air emission contaminants cause ozone, which, in turn, causes significant health problems for Delaware's citizens and visitors. Consequently, the Plan sets forth how the air quality in Delaware will be improved so that Delaware will meet the federal standard for ozone in the future. The Plan refers to Delaware Air Pollution Control Regulation No. 12 for NOx and Regulation No. 24 for VOC as the primary regulatory means to impose RACT on these two ozone causing air contaminants. The Plan also discusses the proposed regulation of other sources in proposed rulemakings, including lightering operations, which entails the transfer in Delaware Bay of oil from one larger vessel to another smaller vessel in order to allow the larger vessel to travel to the refineries along the Delaware Bay. The Plan reports that Department has a pending rulemaking to consider adopting a regulation to regulate the VOC emitted from the oil lightering operations based upon the Department's experts' assessment that the one hour ozone NAAQS was not feasible at this time. This action should satisfy the EPA's comment on the progress on this source of air emission of VOC contaminants. In conclusion, this Order finds and directs that:

1. The proposed Plan, as published in the July 1, 2006, *Delaware Register of Regulations*, is adopted as the Department's final Plan and certification for EPA. The Department will undertake the necessary procedural steps to implement and publish this Order, including publication as a Notice in the *Delaware Register of Regulations* in the next available issue.

2. The Department provided adequate notice of the public hearing in a manner required by the applicable law and regulations, and the Department considered all public comments and has an adequate record for its decision, and no further public hearing is appropriate or necessary.

s/John A. Hughes

John A. Hughes
Secretary

HEARING OFFICER'S REPORT

In the matter of the Delaware Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) under the 8-Hour Ozone National Ambient Air Quality Standard (NAAQS)

Ronald A. Amirikian
Hearing Officer

August 21, 2006

I. Background:

A public hearing was held on August 1, 2006 beginning at 6:15pm in the Department of Natural Resources and Environmental Controls (DNREC's) Priscilla Building conference room, 156 S. State Street, Dover. The purpose of the public hearing was to receive comment on a proposed plan entitled, "Delaware's Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) under the 8-Hour Ozone National Ambient Air Quality Standard (NAAQS)."

In 2004 the U.S. Environmental Protection Agency (EPA) designated Delaware as a moderate non-attainment area under the eight-hour ozone NAAQS. The federal Clean Air Act (CAA) requires Delaware to submit to the EPA a SIP revision demonstrating that Delaware has implemented all necessary RACT controls on all major stationary sources of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) to aid in attaining the eight-hour ozone standard. This revision is due to EPA by September 15, 2006.

II. Summary of Hearing Record:

At the hearing, Frank F. Gao, Ph.D., P.E. Environmental Engineer in the Planning Branch of the Air Quality Management Section of DNREC's Division of Air and Waste Management, and the project leader for developing this SIP revision, provided the following exhibits to the Hearing Officer:

- o Exhibit 1, copy of the register notice and the proposed SIP revision, "Delaware reasonably Available Control Technology State Implementation Plan Under the Eight-Hour Ozone Standard"; as published in Delaware Register of Regulations on July 1, 2006.
- o Exhibit 2, copy of affidavits of publication from The News Journal, Sunday News Journal, and the Delaware State News regarding the announcement of the public hearing to be held on August 1, 2006.
- o Exhibit 3, copy of legal notice mailed to the Department's mailing list notifying addressees of the public hearing to be held on August the 1, 2006.
- o Exhibit 4, letter from Judy Katz, Director of Air Protection Division, EPA, Region 3 office, dated July 31, 2006. This letter was received in the afternoon, August 1, 2006.

Also, it was recorded that no one from the public attended the hearing, and no public comment other than the comment noted in Exhibit 4 above were received.

III. Conclusions and Recommended Findings:

Based on the record developed in this hearing, it does appear that the proposal presented is, in fact, well-founded, and should be adopted by the Secretary as a final planning document.

Also, as noted in the Departments proposal and supported in the July 31, 2006 EPA letter (Exhibit 4), RACT relative to the emissions from the crude oil lightering process being conducted in the Delaware Bay are not reflected in the proposal. The reason for this exception is that RACT-level controls were determined to be not feasible for lightering process under the one-hour ozone standard. Now, the Department is in the process of a rule-making to develop necessary RACT controls on emissions from this source, and plans to submit the rule to EPA under a separate cover in the future.

Finally, it is my recommendation that the following findings be made with respect to the SIP revision proposed at the public hearing on August 1, 2006:

Findings:

1. Proper notice of the hearing was provided as required by both state and federal laws and regulations.
2. The proposal prepared by the Department responds well to the EPA RACT requirements established by EPA.
3. The Department's proposal and the associated Order, which incorporates this report by reference, should be finalized and submitted to the EPA.
4. Once the rule-making process to develop necessary RACT controls on emissions from crude oil lightering operations is complete, that regulation should be submitted to the EPA for inclusion in the Delaware SIP.

Ronald A. Amirikian
Hearing Officer

**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL
CONTROL**

Division of Air and Waste Management

Statutory Authority: 7 Delaware Code, Chapter 60 (7 Del.C. Ch. 60)

GENERAL NOTICE

REGISTER NOTICE

Delaware Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) Under the 8-Hour Ozone National Ambient Air Quality Standard (NAAQS)

1. Title of the Regulations:

DELAWARE REASONABLY AVAILABLE CONTROL TECHNOLOGY (RACT) STATE IMPLEMENTATION PLAN (SIP) UNDER THE 8-HOUR OZONE NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS).

2. Brief Synopsis of the Subject, Substance and Issues:

The Clean Air Act Amendments of 1990 (CAA) requires Delaware to submit to the U.S. Environmental Protection Agency (EPA) a State Implementation Plan (SIP) revision demonstrating that Delaware has implemented all necessary Reasonably Available Control Technology (RACT) controls on all major stationary sources of volatile organic compounds (VOC) and oxides of nitrogen (NOx). The SIP revision must be submitted to EPA by September 15, 2006.

DNREC has developed a draft RACT SIP revision that demonstrates (1) it has implemented required RACT controls on all relevant stationary sources of VOC and NOx emissions, with one potential exception, in Delaware, and (2) all those RACT controls have been approved by EPA under the 1-hour ozone NAAQS, and (3) all those RACT controls have been certified, based on EPA's guidance and standards, to represent RACT control levels under the new 8-hour ozone NAAQS. The one exception is the VOC emissions from the crude oil lightering process being conducted in the Delaware Bay. Under the 1-hour ozone NAAQS no controls were established under RACT for this source because controls were determined to be not feasible at that time. DNREC is now working to complete a rule-making process which may determine that RACT level controls on VOC emissions from lightering process are now feasible, and if this is finalized DNREC will submit the rule to the EPA under a separate cover.

3. Possible Terms of the Agency Action:

None.

4. Statutory Basis or Legal Authority to Act:

7 Del.C. Chapter 60, Environmental Control

5. Other Regulations that may be Affected by the Proposal:

None

6. Notice of Public Comment:

A public hearing will be held on August 1, 2006, beginning at 6:00 pm, in AQM Conference Room, Priscilla Building, 156 South State Street, Dover, DE 19901.

7. Prepared by:

Frank F. Gao, Project Leader (302) 323-4542 June 10, 2006

Delaware Reasonably Available Control Technology (RACT) State Implementation Plan (SIP) Under the 8-Hour Ozone National Ambient Air Quality Standard (NAAQS)

June 13, 2006 Proposal

1. Introduction

This document contains Delaware's State Implementation Plan (SIP) revision for meeting the requirements of Reasonably Available Control Technology (RACT) set forth by the Clean Air Act (CAA) under the 8-hour ozone National Ambient Air Quality Standard (NAAQS). This document is hereafter referred to as "Delaware's 8-hour ozone RACT SIP revision," or simply as "the RACT SIP."

1.1 Background and Requirements

Ground level ozone, one of the principal components of "smog," is a serious air pollutant that harms human health and the environment. High levels of ozone can damage the respiratory system and cause breathing problems, throat irritation, coughing, chest pains, and greater susceptibility to respiratory infection. High levels of ozone also cause serious damage to forests and agricultural crops, resulting in economic losses to logging and farming operations. In June 2004, EPA designated 126 areas of the country as "non-attainment" under the 8-hour ozone NAAQS. Among those non-attainment areas is the Philadelphia-Wilmington-Atlantic City Moderate Non-Attainment Area (NAA) that includes three counties in Delaware, five counties in eastern Pennsylvania and eight counties in southern New Jersey, as shown in Figure 1. Since this moderate NAA is centered by Philadelphia, it is often referred to as "Philadelphia NAA."

Ozone is generally not directly emitted to the atmosphere; rather it is formed in the atmosphere by photochemical reactions between volatile organic compounds (VOC), oxides of nitrogen (NO_x), and carbon monoxide (CO) in the presence of sunlight. Consequently, in order to reduce ozone concentrations in the ambient air, the CAA requires all non-attainment areas to apply controls on VOC/ NO_x emission sources to achieve emission reductions. Among effective control measures, the Reasonably Available Control Technology (RACT) controls are a major group for reducing VOC and NO_x emissions from stationary sources.

The US Environmental Protection Agency (EPA) has defined RACT as the lowest emission limitation that a particular source is capable of meeting by the

application of control technology that is reasonably available considering technological and economic feasibility (44 FR 53761 at 53762, September 17, 1979). Section 182 of the CAA sets forth two separate RACT requirements for ozone non-attainment areas. The first requirement, contained in section 182(a)(2)(A) of the CAA, and referred to as RACT fix-up, requires the correction of RACT rules for which EPA identified deficiencies before the Act was amended in 1990. Delaware has no deficiencies to correct under this Section of the CAA. The second requirement, set forth in section 182(b)(2) of the CAA, applies to moderate or worse ozone non-attainment areas as well as to marginal and attainment areas in ozone transport regions (OTRs) established pursuant to section 184 of the CAA, and requires these non-attainment areas to implement RACT controls on all major VOC and NO_x emission sources and on all sources and source categories covered by a Control Technique Guideline (CTG) issued by EPA.

Under section 183 of the CAA, EPA was required to issue by certain timeframes several guidance documents for RACT controls that would help states meet the requirements of section 182(b)(2). This requirement upon EPA includes developing (1) CTGs for controls of VOC emissions from stationary sources, and (2) Alternate Control Techniques (ACTs) for controls of VOC and NO_x emissions from stationary sources.

The EPA issued three groups of CTG documents, establishing a “presumptive norm” for RACT for various categories of VOC sources: Group I, issued before January 1978 including 15 CTGs; Group II, issued in 1978 including 9 CTGs; and Group III, issued in the early 1980s with 5 CTGs. Sources not covered by the issued CTGs are referred to as non-CTG sources. Section 182(b)(2) of the CAA requires states with ozone non-attainment areas classified as moderate or worse to develop RACT controls for all pre-enactment (i.e., pre-1990) CTG source categories, for all sources subject to post-enactment (i.e., post-1990) CTGs, and for all non-CTG major sources in their non-attainment areas. The EPA has also issued over a dozen ACTs for various categories of VOCs and NO_x sources.

Figure 1. Philadelphia-Wilmington-Atlantic City PA-DE-MD-NJ Moderate Non-Attainment Area

All published CTG and ACT documents, along with other documentation, are listed in Section 5 of this document. In general, states meet the CAA’s RACT requirements by imposing controls that meet the control requirements established in final CTG documents and considering the information in ACT documents to relevant VOC and NO_x sources in their moderate or worse non-attainment areas.

Under the 1-hour ozone NAAQS, Kent County and New Castle County Delaware were designated part of a severe ozone non-attainment area, and Sussex County was designated as a marginal ozone non-attainment area located in an OTR. Therefore, all three counties were subject to RACT requirements under the 1-hour ozone standard. Since the early 1990s, Delaware implemented numerous RACT controls throughout the State to meet the CAA's RACT requirements. These RACT controls were promulgated in Delaware Air Pollution Control Regulation No. 24 for VOC sources and Regulation No. 12 for NO_x sources.

Under the 8-hour ozone NAAQS the entire state of Delaware is a part of the Philadelphia moderate NAA, and is therefore subject to the CAA's RACT requirements. Delaware is required to submit to EPA a SIP revision which addresses how Delaware meets the RACT requirements under the 8-hour ozone standard, by September 15, 2006.

Under the 8-hour ozone NAAQS, EPA requires that states meet the CAA's RACT requirements for their non-attainment areas through (1) certification that previously adopted RACT controls in their SIP revisions approved by EPA under the 1-hour ozone NAAQS represent adequate RACT control levels for 8-hour attainment purposes, or (2) adoption of new or more stringent regulations that represent RACT control levels. A certification shall be accompanied by appropriate supporting information such as consideration of information received during the public comment period and consideration of new data, that may supplement existing RACT guidance documents that were developed for the 1-hour standard, such that State SIPs accurately reflect RACTs for the 8-hour ozone standard based on the current availability of technically and economically feasible controls. Adoption of new RACT regulation(s) shall occur when states have new stationary sources not covered by existing RACT regulations, or when new data or technical information indicates that a previously adopted RACT measure does not represent a newly-available RACT control level.

It should be pointed out that under the 8-hour ozone NAAQS, the entire state of Delaware (i.e., all three counties) is designated as moderate non-attainment area, and is part of the ozone transport region (OTR) established under Section 184 of the CAA. Therefore, in this SIP document, the major source threshold is 50 tons per year (TPY) for non-CTG stationary VOC sources and 100 TPY for stationary NO_x sources. While 25-50 TPY VOC sources and 25-100 TPY NO_x sources are not specifically addressed in this SIP document, they remain subject to the 1-hour RACT requirements under Delaware Regulations and under the "anti-backsliding" provisions of the EPA 8-hour ozone implementation rule.

In summary, Delaware is certifying through this SIP revision that, excerpt as provided for herein, its SIP meets the CAA's RACT requirements for the 50 TPY non-CTG major VOC sources and for 100 TPY NO_x sources, and that all CTG covered categories are addressed at the emission thresholds set in the CTG or in the "Blue Book" (see Reference 63 below) for those CTG categories for which the CTG set no emission threshold. This certification is based on a combination of (1) certification that previously adopted RACT controls in

Delaware's SIP that were approved by EPA under the 1-hour ozone NAAQS are based on the currently available technically and economically feasible controls, and that they represent RACT for 8-hour implementation purposes, and (2) the adoption of new or more stringent regulations that represent RACT control levels.

1.2 Responsibilities

The agency with direct responsibility for preparing and submitting this document is Delaware Department of Natural Resources and Environmental Control (DNREC), Division of Air and Waste Management, Air Quality Management Section (AQM), under the Section Administrator, Ali Mirzakhali. The working responsibility for Delaware's air quality planning falls within AQM's Planning Branch, under the Program Manager, Raymond H. Malenfant. The Air-Shed Evaluation and Planning (AEP) Program within the Planning Branch, with Ronald Amirikian as Planning Supervisor, is instrumental in completing this document. Frank F. Gao of AEP Program is the project leader and principal author of the document.

2. Certification of VOC and NO_x RACT Requirements

2.1 Certification of VOC RACT Requirements

Delaware Air Pollution Control Regulation No. 24 contains Delaware's VOC RACT controls that were implemented and approved into the Delaware SIP under the 1-hour ozone NAAQS. Identification and certification of these VOC RACT controls is provided in Table 1 below. Explanations for each column of Table 1 are as follows:

- Column 1: Identifies each section of Delaware Air Regulation No. 24, Control of Volatile Organic Compound Emissions, which contains Delaware's VOC RACT provisions. Regulation 24 required, in general, major VOC emitting sources to comply with the relevant provisions by May 31, 1995. Under the 1-hour ozone standard, the VOC RACT regulation defines a major VOC emitting source as a stationary source that emits VOCs at a rate equal to or greater than 25 tons per year (TPY) in Kent and New Castle Counties, and 50 TPY in Sussex County. The date of promulgation of each section is also provided in this column. (Note: Column 1 starts from Section 10 of Regulation 24. Sections 1 through 9 of Regulation 24 are general implementing provisions necessary to implement RACT, not actual RACT controls.)
- Column 2: Identifies the underlying basis for the RACT determination.
- Column 3: Identifies the date the rule was approved into the Delaware SIP, along with the Federal Register citation.
- Column 4: Explains RACT control applicability and requirements.
- Column 5: Certifies whether or not the current rule represents RACT under the 8-hour ozone NAAQS. Where Delaware has certified that a current SIP approved regulation represents RACT under the 8-hour ozone standard, AQM affirms that

it is not aware of any significant changes in control technology that affect the original RACT determination, unless otherwise explained in Column 5. Also, note that any discussion on cost effectiveness is relative only to this RACT SIP, and is not relevant as to whether or not control of a particular source or source category is cost effective relative to Delaware's entire SIP.

Delaware's minor source permitting program under Regulation No. 2, permits, requires a detailed administrative and technical review of Delaware sources that emit air contaminants far below the "major" threshold" and CTG cutoffs (i.e., permits are required for the emission of 10 pounds per day or more of "aggregate" air contaminants, and registrations for emissions between 0.2 and 10 lb/day of air contaminants). This permitting program gives confidence that all major and CTG covered sources are controlled by RACT level or better controls.

Table 1. Delaware VOC RACT List and Certification under the 8-Hour Ozone NAAQS

Delaware Regulation No. 24 Section				
Section 10 - Aerospace Coatings <u>08/11/2002</u>	Control Technology Guidance (CTG) document: Control of Volatile Organic Compound Emissions from Coating Operations at Aerospace Manufacturing and Rework Operations, EPA-453/R-97-004, December 1997			
Section 11 - Mobile Equipment Repair and Refinishing <u>11/11/2001</u>	Alternative Control Techniques (ACT) document: Reduction of Volatile Organic Compound Emissions from Automobile Refinishing, EPA-450/3-88-009, October 1988. ACT Document: Automobile Refinishing, EPA-453/R-94-031, April 1994.			Yes. This section was updated in 2001 based on an Ozone Transport Commission (OTC) model rule as part of Delaware's mitigation of a 1-hour attainment shortfall. It is more stringent than the current CTG/ACT control level, and represents RACT control level under the 8-hour ozone NAAQS.

<p>Section 12 – Control of VOC Emissions-Surface Coating of Plastic Parts</p> <p><u>11/29/1994</u></p>	<p>ACT document: Surface Coating of Automotive/Transportation and Business Machine Plastic Parts, EPA-453/R-94-017, February 1994.</p>			<p>Yes.</p> <p>This section is consistent with the most recent ACT specified requirement. It represents current RACT control level under the 8-hour ozone NAAQS.</p>
<p>Section 13 - Automobile and Light-Duty Truck Coating Operations</p> <p>Section 14 - Can Coating</p> <p>Section 15 - Coil Coating</p> <p>Section 16 - Paper Coating</p> <p>Section 17 - Fabric Coating</p> <p>Section 18 - Vinyl Coating</p> <p><u>01/11/1993</u> for all above sections.</p>				
<p>Section 19 - Coating of Metal Furniture</p> <p><u>01/11/1993</u></p>	<p>CTG document: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume III: Surface Coating of Metal Furniture, EPA-450/2-77-032, December 1977.</p>			
<p>Section 20 - Coating of Large</p>	<p>CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume V: Surface Coating of Large Appliances, EPA-450/2-77-034, December</p>			

Appliances <u>01/11/1993</u>	1977. (Group I)			
Section 21 - Coating of Magnet Wire <u>11/29/1994</u>	CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume IV: Surface Coating of Insulation of Magnet Wire, EPA-450/2-77-033, December 1977. (Group I)			
Section 22 - Coating of Miscellaneous Metal Parts <u>01/11/1993</u>	CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VI: Surface Coating of Miscellaneous Metal Parts and Products, EPA-450/2-78-015, June 1978. (Group II)			
Section 23 - Coating of Flat Wood Paneling <u>01/11/1993</u>	CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VII: Factory Surface Coating of Flat Wood Paneling, EPA-450/2-78-032, June 1978. (Group II)			
Section 24 - Bulk Gasoline Plants <u>01/11/1993</u>				
Section 25 - Bulk Gasoline Terminals <u>11/29/1994</u>	CTG: Control of Volatile Organic Emissions from Bulk Gasoline Plants, EPA-450/2-77-035, December, 1977. (Group I)			
Section 26 - Gasoline Dispensing Facility Stage I Vapor Recovery <u>01/11/2002</u>	CTG: Design Criteria for Stage I Vapor Control Systems - Gasoline Service Stations, November 1975. (Group I)			
Section 27 - Gasoline Tank Trucks <u>01/11/1993</u>	CTG: Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals, EPA-450/2-77-026, December 1977. (Group I) CTG: Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems, EPA-450/2-78-051, December 1978. (Group II)			

Section 28 - Petroleum Refinery Sources <u>01/11/1993</u>	CTG: Control of Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds, EPA-450/2-77-025, October 1977. (Group I)			
Section 29 - Leaks from Petroleum Refinery Equipment <u>11/29/1994</u>	CTG: Control of Volatile Organic Compound Leaks from Petroleum Refinery Equipment, EPA-450/2-78-036, June 1978. (Group II)			
Section 30 - Petroleum Liquid Storage in External Floating Roof Tanks <u>11/29/1994</u>	CTG: Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks, EPA-450-2/78-047, December 1978. (Group II).			
Section 31 - Petroleum Liquid Storage in Fixed Roof Tanks <u>11/29/1994</u>	CTG: Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed Roof Tanks, EPA-450/2-77-036, December 1977. (Group I)			
Section 32 - Leaks from Natural Gas/Gasoline Processing Equipment <u>11/29/1994</u>	CTG: Control of Volatile Organic Compound Equipment Leaks from Natural Gas/Gasoline Processing Plants, EPA-450/2-83-007, December 1983. (Group III)			
Section 33 - Solvent Cleaning and Drying <u>11/11/2001</u>				
Section 34 - Cutback and Emulsified	CTG: Control of Volatile Organic Compounds from Use of Cutback Asphalt, EPA-450/2-77-037, December 1977. (Group I)			

Asphalt <u>01/11/1993</u>				
Section 35 - Manufacture of Synthesized Pharmaceutic al Products <u>11/29/1994</u>	CTG: Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products, EPA-450/2-78-029, December 1978. (Group II)			
Section 36 - Control of VOC Emissions- Stage II Vapor Recovery <u>01/11/2002</u>	Non-CTG RACT, CAA Section 182(b)(3).			
Section 37 - Graphic Arts Systems <u>11/29/1994</u>	CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VIII: Graphic Arts-Rotogravure and Flexography, EPA-450/2-78-033, December 1978. (Group II)			
Section 38 - Petroleum Solvent Dry Cleaners <u>01/11/1993</u>	CTG: Control of Volatile Organic Compound Emissions from Large Petroleum Dry Cleaners, EPA-450/3-82-009, September 1982. (Group III)			
Section 39 - Reserved				
Section 40 - Leaks from Synthetic Organic Chemical, Polymer, and Resin Manufacturing Equipment <u>01/11/1993</u>	CTG: Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations in SOCMI, November 15, 1993, EPA-450/4-91-031. CTG: Control of Volatile Organic Compound Fugitive Emissions from Synthetic Organic Chemical Polymer and Resin Manufacturing Equipment, EPA-450/3-83-006, March 1984. (Group III)			
Section 41 - Manufacture of High-	CTG: Control of Volatile Organic Compound Emissions from Manufacture of High-Density			

<p>Density Polyethylene, Polypropylene and Polystyrene Resins</p> <p><u>01/11/1993</u></p>	<p>Polyethylene, Polypropylene, and Polystyrene Resins, EPA- 450/3-83-008, November 1983. (Group III)</p>			
<p>Section 42 - Air Oxidation Processes in the Synthetic Organic Chemical Manufacturing Industry</p> <p><u>01/11/1993</u></p>				
<p>Section 43 - Bulk Gasoline Marine Tank Vessel Loading Facilities</p> <p><u>08/08/1994</u></p>	<p>Non-CTG RACT, CAA Section 183(f).</p>			
<p>Section 44 - Control of VOC Emissions- Batch Processing Operations</p> <p><u>11/29/1994</u></p>	<p>ACT Document: Control of Volatile Organic Compound Emissions from Batch Processes, EPA-453/R-93- 017, February 1994.</p>			
<p>Section 45 - Control of VOC Emissions- Industrial Cleaning Solvents</p> <p><u>11/29/1994</u></p>	<p>ACT Document: Industrial Cleaning Solvents, EPA- 453/R-94-015, February 1994.</p>			
<p>Section 47 - Control of VOC Emissions- Offset Lithographic</p>	<p>CTG: Control of Volatile Organic Compound Emissions from Offset Lithographic Printing (CTG Draft), EPA-453/D-95-001, September 1993. ACT Document: Offset Lithographic Printing, EPA-</p>			

Printing <u>11/29/1994</u>	453/R-94-054, June 1994.			
Section 48 - Reactor Processes and Distillation Operations in the Synthetic Organic Chemical Manufacturing Industry <u>11/29/1994</u>	CTG: Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations in SOCMI, November 15, 1993, EPA-450/4-91-031.			
Section 49 - Control of VOC Emissions- Control of Volatile Organic Compound Emissions from Volatile Organic Liquid Storage Vessels <u>11/29/1994</u>	ACT Document: Volatile Organic Liquids Storage in Floating and Fixed Roof Tanks, EPA-453/R-94-001, February 1994.			
Section 50 - Control of VOC Emissions- Other Facilities that Emit Volatile Organic Compounds (VOCs) <u>11/29/1994</u>	Non-CTG RACT, CAA Section 182(b)(2)(C).			

2.2. Certification of NO_x RACT

Delaware Air Pollution Control Regulation No. 12 contains Delaware's NO_x RACT controls that were implemented and approved into the Delaware SIP under the 1-hour ozone NAAQS. Certification of those RACT rules is conducted in Table 2. Explanations for each column of Table 2 are as follows.

- Column 1: Identifies NO_x source groups covered by Delaware Air Regulation No. 12, Control of Nitrogen Oxides Emissions, which contains NO_x RACT provisions. Regulation No. 12 requires major NO_x emitting sources to comply with the relevant provisions by May 31, 1995. The NO_x RACT regulation defines a major NO_x emitting source as a stationary source that emits NO_x at a rate that is equal to or greater than 25 tons per year in Kent and New Castle Counties, and 100 TPY in Sussex County.
- Column 2: Identifies the underlying basis for the RACT determination. (Note: the fundamental basis of implementing NO_x RACT controls is CAA Section 182(b)(2) and Section 182(f). Citation of these sections is not repeated in Column 2 of Table 2.)
- Column 3: Identifies the date the rule was approved into the Delaware SIP, along with the Federal Register citation. (Note: Regulation No. 12 was first implemented in November 1993, and conditionally approved by EPA in June 1999. After Delaware submitted four case-by-case RACT determinations in July 2000, EPA granted the final approval of Regulation No. 12 on June 14, 2001.)
- Column 4: Explains RACT control requirements.
- Column 5: Certifies whether or not the rule represents RACT under the 8-hour ozone NAAQS. Where Delaware has certified that a current SIP approved regulation represents RACT under the 8-hour ozone standard, AQM affirms that it is not aware of any significant changes in control technology that affect the original RACT determination, unless otherwise explained in Column 5. Also, note that any discussion on cost effectiveness is relative only to this RACT SIP, and is not relevant as to whether or not control of a particular source or source category is cost effective relative to Delaware's entire SIP.

Delaware's minor source permitting program under Regulation No. 2, permits, requires a detailed administrative and technical review of Delaware sources that emit far below the "major" threshold" (i.e., permits are required for the emission of 10 pounds per day or more of "aggregate" air contaminants, and registrations for emissions between 0.2 and 10 lb/day of air contaminants). This permitting program gives confidence that all major sources are controlled by RACT level or better controls.

Table 2. Delaware NO_x RACT List and Certification under the 8-Hour Ozone NAAQS

Delaware Regulation No. 12 Source Group	RACT Documental Basis	SIP Revision Approved by EPA	RACT Rule Requirements	Requirements at least as stringent as RACT for the 8-hour Ozone NAAQS?
Fuel burning equipment with an input capacity of	NESCAUM Stationary Source Committee Recommendation on NO _x RACT for Utility Boilers 8/12/1992 NESCAUM Stationary Source	Final Federal Register Date: 06/14/2001	Emissions subject to 0.2., 0.25, or 0.38 lb/mmBTU limits for gas, oil and	Yes. This provision fully implements the required NO _x

100 mmBTU/hr or greater	<u>Committee Recommendation on NOx RACT for Industrial Boilers, Internal Combustion Engines and Combustion Turbines 9/18/1992</u> <u>Controlling Emissions of Nitrogen Oxides from Existing Utility Boilers Under Title I of the Clean Air Act: Options and Recommendations, STAPPA/ALAPCO 4/27/1992</u> <u>State Implementation Plans: Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, USEPA 10/27/1995</u> <u>Summary of NOx Control Technologies and their Availability and Extent of Application, USEPA February 1992</u> <u>Alternative Control Techniques Document: NOx Emissions from Process Heaters (Revised), USEPA, September 1993</u> <u>Alternative Control Techniques Document: NOx Emissions from Industrial/Commercial/Institutional (ICI) Boilers, USEPA, March 1994</u> <u>Alternative Control Techniques Document: NOx Emissions from Utility Boilers, USEPA, March 1994</u> <u>State's Report on Electric Utility Nitrogen Oxides Reduction Technology Options for Application by the Ozone Transport Assessment Group, prepared for the OTAG Control Technology & Options Workgroup by Ken Colburn, 4/11/1996</u> <u>Status Report on NOx Controls for Gas Turbines, Cement Kilns, Industrial Boilers, Internal Combustion Engines, NESCAUM, December 2000</u> <u>Summary of State/Local NOx Regulations for Stationary Sources, USEPA, 2004</u>	Federal Register Citation: 66 FR 32231	coal fired units, respectively; or emissions must be controlled by low NOx burner technology or flue gas circulation with excess air. Generally, equipment larger than 100 mmBTU is required to install NOx continuous emission monitoring system (CEMS).	controls over the targeted sources, and represents the current RACT control level under the 8-hour ozone NAAQS.
Fuel burning equipment with an input capacity of 50 mmBTU/hr or greater and less than 100 mmBTU/hr	<u>NESCAUM Stationary Source Committee Recommendation on NOx RACT for Industrial Boilers, Internal Combustion Engines and Combustion Turbines 9/18/1992</u> <u>Summary of NOx Control Technologies and their Availability and Extent of Application, USEPA February 1992</u> <u>Alternative Control Techniques Document: NOx Emissions from Process Heaters (Revised), USEPA, September 1993</u> <u>Alternative Control Techniques Document: NOx Emissions from Industrial/Commercial/Institutional (ICI) Boilers, USEPA, March 1994</u> <u>Status Report on NOx Controls for Gas Turbines, Cement Kilns, Industrial Boilers, Internal Combustion Engines, NESCAUM, December 2000</u>	Final Federal Register Date: 06/14/2001 Federal Register Citation: 66 FR 32231	Emission rates of the targeted sources are limited to those to be achieved by low excess air and low NOx burners, or flue gas recirculation.	Yes. This provision fully implements the required NOx controls over the targeted sources, and represents the current RACT control level under the 8-hour ozone NAAQS.

	December 2000 <u>Summary of State/Local NO_x Regulations for Stationary Sources</u> , USEPA, 2004			
Fuel burning equipment with an input capacity of less than 50 mmBTU/hr	<u>NESCAUM Stationary Source Committee Recommendation on NO_x RACT for Industrial Boilers, Internal Combustion Engines and Combustion Turbines 9/18/1992</u> <u>Summary of NO_x Control Technologies and their Availability and Extent of Application</u> , USEPA February 1992 <u>Alternative Control Techniques Document: NO_x Emissions from Process Heaters (Revised)</u> , USEPA, September 1993 <u>Alternative Control Techniques Document: NO_x Emissions from Industrial/Commercial/Institutional (ICI) Boilers</u> , USEPA, March 1994 <u>Summary of State/Local NO_x Regulations for Stationary Sources</u> , USEPA, 2004	Final Federal Register Date: 06/14/2001 Federal Register Citation: 66 FR 32231	The rule requires the targeted sources to conduct annual tune-ups.	Yes. This provision fully implements the required NO _x controls over the targeted sources, and represents the current RACT control level under the 8-hour ozone NAAQS.
Alternative requirement for fuel burning equipment - Seasonal fuel switching (April 1 through October 31) to a low NO _x emitting fuel.	Memorandum subject, <u>Fuel Switching to Meet the Reasonably Available Control Technology (RACT) Requirements for Nitrogen Oxides (NO_x)</u> , Michael H. Shapiro, Air and Radiation, 7/30/1993 <u>Summary of NO_x Control Technologies and their Availability and Extent of Application</u> , USEPA February 1992 Memorandum subject, <u>Nitrogen Oxides (NO_x) Questions from Ohio EPA</u> , Tom Helms, Chief Ozone/Carbon Monoxide Programs Branch, (no date, references 11/30/1993 questions) <u>Summary of State/Local NO_x Regulations for Stationary Sources</u> , USEPA, 2004 <u>Alternative Control Techniques Document: NO_x Emissions from Industrial/Commercial/Institutional (ICI) Boilers</u> , USEPA, March 1994 <u>State Implementation Plans: General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990</u> , USEPA	Final Federal Register Date: 06/14/2001 Federal Register Citation: 66 FR 32234	Fuel switching is limited to the use of natural gas, liquid petroleum gas (LPG) or distillate oil. A 90% availability of the new fuel is required.	Yes. This provision fully implements the required NO _x controls over the targeted sources, and represents the current RACT control level under the 8-hour ozone NAAQS.
Gas turbines	<u>Alternative Control Techniques Document: NO_x Emissions from Stationary Gas Turbines</u> , USEPA, January 1993 <u>NESCAUM Stationary Source Committee Recommendation on NO_x RACT for Industrial Boilers, Internal Combustion Engines and Combustion Turbines 9/18/1992</u> <u>Status Report on NO_x Controls for Gas Turbines, Cement Kilns, Industrial Boilers, Internal Combustion Engines</u> , NESCAUM, December 2000	Final Federal Register Date: 06/14/2001 Federal Register Citation: 66 FR 32231	The rule subjects gas turbines to 42 and 88 ppm NO _x limits for gas and oil fired units, respectively	Yes. This provision fully implements the required NO _x controls over the targeted sources, and represents the current RACT control level under the 8-hour ozone NAAQS.

	<p><u>Summary of NO_x Control Technologies and their Availability and Extent of Application</u>, USEPA, February 1992</p> <p><u>Summary of State/Local NO_x Regulations for Stationary Sources</u>, USEPA, 2004</p>			
<p>Stationary internal combustion engines</p>	<p><u>Summary of NO_x Control Technologies and their Availability and Extent of Application</u>, USEPA February 1992</p> <p><u>NESCAUM Stationary Source Committee Recommendation on NO_x RACT for Industrial Boilers, Internal Combustion Engines and Combustion Turbines</u> 9/18/1992</p> <p><u>Alternative Control Techniques Document: NO_x Emissions from Stationary Reciprocating Internal Combustion Engines</u>, USEPA 1993</p> <p><u>NO_x Emissions from Stationary Internal Combustion Engines</u>, USEPA, October 2003</p> <p><u>Stationary Reciprocating Internal Combustion Engines – Updated Information on NO_x Emissions and Control Techniques – Revised Final Report</u>, USEPA, 9/1/2000</p> <p><u>Sourcebook: NO_x Control Technology Data</u>, USEPA, July 1991</p> <p><u>Status Report on NO_x Controls for Gas Turbines, Cement Kilns, Industrial Boilers, Internal Combustion Engines</u>, NESCAUM, December 2000</p> <p><u>Summary of State/Local NO_x Regulations for Stationary Sources</u>, USEPA, 2004</p>	<p>Final Federal Register Date: 06/14/2001</p> <p>Federal Register Citation: 66 FR 32231</p>	<p>The rule establishes emission limits for the targeted engines to those achieved using pre-ignition chamber combustion or clean burn technology for gas fired units and those achieved using lean burn technology for diesel fired units.</p>	<p>Yes. This provision fully implements the required NO_x controls over the targeted sources, and represents the current RACT control level under the 8-hour ozone NAAQS.</p>
<p>Fuel burning equipment used exclusively for providing residential comfort heating and hot water</p>	<p><u>Summary of NO_x Control Technologies and their Availability and Extent of Application</u>, USEPA February 1992</p> <p><u>State Implementation Plans: General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990</u>, USEPA</p>	<p>Final Federal Register Date: 06/14/2001</p> <p>Federal Register Citation: 66 FR 32231</p>	<p>RACT rule specifies no emissions limits or control requirements.</p>	<p>Yes. For the 1-hour NAAQS, DNREC had determined that no cost effective controls exist for the specified sources and is not aware of any significant changes in technology that affect the original RACT determination. This provision represents current NO_x RACT control requirement under the 8-hour ozone NAAQS.</p>
<p>Incinerator or</p>	<p><u>Summary of NO_x Control Technologies and their Availability</u></p>	<p>Final Federal</p>	<p>RACT rule specifies no</p>	<p>Yes. For the 1-hour</p>

<p>thermal/catalytic oxidizer constructed before</p> <p>November 15, 1992, and used primarily for the control of air pollution.</p>	<p>and Extent of Application, USEPA February 1992</p>	<p>Register Date: 06/14/2001 Federal Register Citation: 66 FR 32231</p>	<p>emissions limits or control requirements.</p>	<p>NAAQS, DNREC had determined that no cost effective controls exist for the specified sources and is not aware of any significant changes in technology that affect the original RACT determination. This provision represents current NO_x RACT control requirement under the 8-hour ozone NAAQS.</p>
<p>Fuel burning equipment with a rated heat input capacity of less than 15 MMBTU/hour</p>	<p>Memorandum Subject: <u>De Minimis Values for NO_x RACT</u>, from G.T. Helms, Ozone Policy and Strategies Group, dated 1/1/1995 <u>Alternative Control Techniques Document: NO_x Emissions from Industrial/Commercial/Institutional (ICI) Boilers</u>, USEPA, March 1994</p>	<p>Final Federal Register Date: 06/14/2001 Federal Register Citation: 66 FR 32231</p>	<p>RACT rule specifies no emissions limits or control requirements-</p>	<p>Yes. For the 1-hour NAAQS, DNREC had determined that no cost effective controls exist for the specified sources and is not aware of any significant changes in technology that affect the original RACT determination. This provision represents current NO_x RACT control requirement under the 8-hour ozone NAAQS.</p>
<p>Stationary internal combustion engine with a rated capacity of less than 450 hp of output power.</p>	<p>Memorandum Subject: <u>De Minimis Values for NO_x RACT</u>, from G.T. Helms, Ozone Policy and Strategies Group, dated 1/1/1995 <u>NO_x Emissions from Stationary Internal Combustion Engines</u>, USEPA, October 2003 <u>Stationary Reciprocating Internal Combustion Engines – Updated Information on NO_x Emissions and Control Techniques – Revised Final Report</u>, USEPA, 9/1/2000 <u>Alternative Control Techniques Document: NO_x Emissions from Stationary Reciprocating Internal Combustion Engines</u>, USEPA 1993</p>	<p>Final Federal Register Date: 06/14/2001 Federal Register Citation: 66 FR 32231</p>	<p>RACT rule specifies no emissions limits or control requirements.</p>	<p>Yes. For the 1-hour NAAQS, DNREC had determined that no cost effective controls exist for the specified sources and is not aware of any significant changes in technology that affect the original RACT determination.</p>

				This provision represents current NO _x RACT control requirement under the 8-hour ozone NAAQS. (note that DE has adopted beyond RACT requirements for this source category under Reg. 1142).
Any source operating during the month of November to the end of March and operating with a capacity factor of 5% or less from April 1 to October 31.	Memorandum subject, <u>Nitrogen Oxides (NO_x) Questions from Ohio EPA</u> , Tom Helms, Chief Ozone/Carbon Monoxide Programs Branch (no date cited). Memorandum Subject: <u>De Minimis Values for NO_x RACT</u> , from G.T. Helms, Ozone Policy and Strategies Group, 1/1/1995	Final Federal Register Date: 06/14/2001 Federal Register Citation: 66 FR 32231	RACT rule specifies no emissions limits or control requirements.	Yes. Under the 1-hour ozone NAAQS, DNREC determined that no cost effective controls exist for the specified sources. DE is not aware of any significant changes in technology that affect the original RACT determination. This provision represents current NO _x RACT control requirement under the 8-hour ozone NAAQS. (note that separate from RACT DE is in the process of developing beyond RACT regulations for this source category to address high peak ozone day operations)
Any fuel burning equipment, gas turbine, or internal combustion engine with an annual capacity factor of less	Memorandum Subject: <u>De Minimis Values for NO_x RACT</u> , from G.T. Helms, Ozone Policy and Strategies Group, dated 1/1/1995 <u>Alternative Control Techniques Document: NO_x Emissions from Industrial/Commercial/Institutional (ICI) Boilers</u> , USEPA, March 1994 <u>Alternative Control Techniques Document: NO_x Emissions from Stationary Reciprocating Internal Combustion Engines</u> , USEPA 1993 <u>Alternative Control Techniques</u>	Final Federal Register Date: 06/14/2001 Federal Register Citation: 66 FR 32231	RACT rule specifies no emissions limits or control requirements.	Yes. This provision represents current NO _x RACT control requirement under the 8-hour ozone NAAQS. (note that separate from RACT DE is in the process of

than percent.	5	Document: NO _x Emissions from Stationary Gas Turbines, USEPA, January 1993 Alternative Control Techniques Document: NO _x Emissions from Process Heaters (Revised), USEPA, September 1993			developing beyond RACT regulations for this source category to address high peak ozone day operations).
Case-by-case RACT determination *: CitiSteel USA, Incorporated, Claymont, Delaware: Electric Arc Furnace (EAF) rated at 150 tons per charge.		Alternative Control Techniques Document: NO _x Emissions from Iron and Steel Mills, USEPA, September 1994	Final Federal Register Date: 06/14/2001 Federal Register Citation: 66 FR 32231	Typical fuel fired combustion equipment applied to NO _x emitting sources are not technically feasible for an EAF. Therefore, DNREC certifies that its 2001 determination remains valid and that no additional requirements on the CitiSteel's EAF operations are required under RACT. A well-designed exhaust system constitutes RACT in compliance with Regulation No. 12 of the Delaware Regulations Governing the Control of Air Pollution.	Yes. This provision fully implements the required NO _x controls over the targeted source, and represents the current RACT control level under the 8-hour ozone NAAQS.

* Three other case-by-case NO_x RACT determinations were made by Delaware: (1) a sulfuric acid (H₂SO₄) and interstage absorption system (ISA) process, (2) a metallic nitrite process, and (3) a Polyhydrate Alcohol Catalyst Regenerative (PACR) process. Processes (1) and (2) were both at the General Chemical Corporation facility, Claymont, New Castle, Delaware, and process (3) was at SPI Polyols, Incorporated, Atlas Point Site, New Castle, Delaware. The General Chemical facility at Claymont was permanently shutdown. The PACR process at SPI was permanently shutdown. Therefore, these three NO_x RACT determinations are no longer required in Delaware's ozone SIP.

3. Adoption of Revised and New RACT Requirements

3.1. Adoption of Revised and/or New VOC RACT Requirements

As indicated in Table 1 above, many Delaware's RACT controls (i.e., sections in Regulation No. 24, Control of Volatile Organic Compound Emissions) were promulgated in 1990s to meet relevant requirements specified in the CAA and EPA's guidance documents. Since that time many sections of Regulation No. 24 have been revised to reflect updated RACT level control technology. All

major sources in Delaware, and all CTG covered sources with applicability cut-off levels consistent with the “blue book” (see reference 63 below) are covered by RACT controls, as certified in Table 1, under the 8-hour ozone NAAQS, except for possibly the lightering operations in Sussex County.

Delaware is now in a rule-making process of evaluating and adopting relevant RACT control over petroleum lightering operations. The following is a summary of the process.

Lightering Operations:

- Lightering is the transfer of cargo from one marine vessel (typically, large ocean-going tankers) to another marine vessel to reduce the draft and to permit transit through more shallow waters. Ocean-going crude oil tankers generally enter the Delaware Bay drawing up to 55 feet of draft. Crude oil is pumped from these marine vessels to smaller tankers and barges until the draft of the ocean-going vessel is less than 35 feet. At this draft, vessels can safely transit to the refineries along Delaware River. During transfer of crude oil, VOCs and other hazardous air pollutants are emitted.
- Under the 1-hour ozone NAAQS, lightering operations in Delaware Bay remained uncontrolled, as RACT-level controls were determined to be not feasible for lightering process at that time. In 2001, DNREC began to reevaluate this determination, and started a rule making under the attainment and maintenance of the 1-hour ozone NAAQS to control air emissions from lightering operations in Delaware Bay.
- Between March and June 2001, five regulatory workgroup meetings were held with a diverse representation of industry, environmental, health care and state interests. The draft regulation emerging from these workgroup meetings was presented in 3 public workshops conducted in June 2001. Following the public workshops, the General Assembly passed Senate Joint Resolution (SJR-6) that established a “blue ribbon panel” and charged them, amongst other minor tasks, to study and make “recommendations concerning the potential impact of the safe operations” during lightering as a result of this regulation. The report was supposed to be issued by March 15, 2002.
- The public hearing on this regulation was conducted, as previously scheduled, on August 30, 2001. However, the hearing record was left open pending the receipt of the SJR-6 panel’s recommendations and report. The March 15, 2002 report deadline passed without the panel convening. A second, identical resolution (SJR-1) was passed in January 2003 and the March 15, 2004 deadline passed without any report.
- In the spring of 2003, DNREC Secretary John H. Hughes held a series of meetings with interested stakeholders to get the process back on track. This effort resulted in the modification of a lightering vessel and the completion of three vapor balancing trials. The first trial took place in March 2004. Since that time, six other vapor balancing trials have been conducted. While the success of the vapor balancing trials has varied, Martians (the major lightering operator in Delaware Bay) demonstrated that vapor balancing in lightering process can

reduce the VOC emissions, and, most importantly, can be operated safely. DNREC believes that the major barrier in promulgating the lightering emission control regulation has been overcome. That is, the vapor balancing trials demonstrated the safe transfer of crude oil during controlled lightering operations.

- Based on the successful demonstration of the vapor balancing trials, DNREC has recalled and expanded the regulatory workgroup. The Department is currently in process of developing Section 46 of Regulation No. 24: Lightering Operations. Upon completion of the rulemaking process, DNREC will submit Section 46 to EPA as a SIP revision under a separate cover.

3.2. Revised and/or New NO_x RACT Requirements

As indicated in Table 2 above, Delaware certifies that Regulation No. 12 appropriately implements NO_x RACT controls in Delaware under the 8-hour ozone standard. In addition, Delaware is currently developing beyond-RACT provisions to aid in attainment and maintenance of the 8-hour NAAQS. While not the subject of this RACT submittal, these beyond-RACT controls include:

- Regulation 1142, Section 1 – Control of NO_x Emissions from Industrial Boilers. This regulation imposes beyond RACT controls on certain boilers with heat input greater than 100 mmBTU/hr. (Regulation 1142 is previously numbered as Regulation 42. The new number is used to follow the new Delaware state document numbering system established by the Delaware Register of Regulations).
- EGU Multi-Pollutant Regulation. This regulation is under development, and is anticipated to impose beyond RACT NO_x controls on large coal and residual oil fired EGUs.
- Large Refinery Boiler Regulation. This regulation is underdevelopment, and is anticipated to impose beyond RACT NO_x controls on large boilers and heat exchangers at petroleum refineries.
- Large Non-Refinery Boiler Regulation. This regulation is underdevelopment, and is anticipated to impose beyond RACT NO_x controls on large boilers and heat exchangers not located at petroleum refineries.
- Regulation No. 1144 - Stationary Generators. This regulation was completed in 2005, and imposes beyond RACT NO_x controls on stationary generators used at times other than times of emergency.
- Peaking Turbine Regulation. This regulation is underdevelopment, and is anticipated to impose beyond RACT NO_x controls on peaking units, in order to address the high peak ozone day emissions from these units.
- Diesel Retrofits. This rule is under consideration and is anticipated to provide further NO_x reductions for the attainment of the 8-hour ozone standard.

4. Control Techniques Guideline (CTG) Requirements Not Adopted in Delaware

The following CTG VOC controls have not been adopted in Delaware because there are no emission sources with those CTG controls.

- Control of Volatile Organic Emissions from Manufacture of Pneumatic Rubber Tires, EPA-450/2-78-030, December 1978. (Group II).
- Control of Volatile Organic Compound Emissions from Wood Furniture Manufacturing Operations, EPA-453/R-96-007, April 1996.
- Control Techniques Guidelines for Shipbuilding and Ship Repair Operations (Surface Coating) - August 1996 (61 FR 44050), August 27, 1996.

In addition, EPA identified, in the November 29, 2005 preamble (70 FR 71612 at 71652), that cement kilns and stationary internal combustion engines are two categories for which additional NO_x control information was available since the 1-hour RACT determinations were made. However, Delaware does not have these two NO_x emission sources within its boundary.

Furthermore, after the 1-hour VOC and NO_x RACT rules were implemented, Delaware does not have any new major VOC and NO_x sources that fall outside the scope of the implemented RACT rules (i.e., Regulation 24 and Regulation 12).

5. Documentation

A. U.S. EPA's Control Techniques Guidelines (CTG) documents, Alternative Control Techniques (ACT) documents, and Additional Reference Documents, cited in this SIP.

1. Control Technology Guidance (CTG) document: Control of Volatile Organic Compound Emissions from Coating Operations at Aerospace Manufacturing and Rework Operations, EPA-453/R-97-004, December 1997.
2. Alternative Control Techniques (ACT) document: Reduction of Volatile Organic Compound Emissions from Automobile Refinishing, EPA-450/3-88-009, October 1988.
3. ACT: Automobile Refinishing, EPA-453/R-94-031, April 1994.
4. ACT: Surface Coating of Automotive/Transportation and Business Machine Plastic Parts, EPA-453/R-94-017, February 1994.
5. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks, EPA-450/2-77-008, May 1977 (Group I).

6. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume III: Surface Coating of Metal Furniture, EPA-450/2-77-032, December 1977.
7. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume V: Surface Coating of Large Appliances, EPA-450/2-77-034, December 1977 (Group I).
8. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume IV: Surface Coating of Insulation of Magnet Wire, EPA-450/2-77-033, December 1977 (Group I).
9. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VI: Surface Coating of Miscellaneous Metal Parts and Products, EPA-450/2-78-015, June 1978 (Group II).
10. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VII: Factory Surface Coating of Flat Wood Paneling, EPA-450/2-78-032, June 1978 (Group II).
11. CTG: Control of Volatile Organic Emissions from Bulk Gasoline Plants, EPA-450/2-77-035, December, 1977 (Group I).
12. CTG: Control of Volatile Organic Emissions from Bulk Gasoline Plants, EPA-450/2-77-035, December, 1977 (Group I).
13. CTG: Design Criteria for Stage I Vapor Control Systems - Gasoline Service Stations, November 1975 (Group I).
14. CTG: Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals, EPA-450/2-77-026, December 1977 (Group I).
15. CTG: Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems, EPA-450/2-78-051, December 1978 (Group II).
16. CTG: Control of Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds, EPA-450/2-77-025, October 1977 (Group I).
17. CTG: Control of Volatile Organic Compound Leaks from Petroleum Refinery Equipment, EPA-450/2-78-036, June 1978 (Group II).
18. CTG: Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks, EPA-450-2/78-047, December 1978 (Group II).
19. CTG: Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed Roof Tanks, EPA-450/2-77-036, December 1977 (Group I).

20. CTG: Control of Volatile Organic Compound Equipment Leaks from Natural Gas/Gasoline Processing Plants, EPA-450/2-83-007, December 1983 (Group III).
21. CTG: Control of Volatile Organic Emissions from Solvent Metal Cleaning, EPA-450/2-77-022 November 1977 (Group I).
22. ACT: Halogenated Solvent Cleaners, EPA-450/3-89-030, August 1989.
23. CTG: Control of Volatile Organic Compounds from Use of Cutback Asphalt, EPA-450/2-77-037, December 1977 (Group I).
24. CTG: Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products, EPA-450/2-78-029, December 1978 (Group II).
25. CAA Section 182(b)(3).
26. CTG: Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VIII: Graphic Arts-Rotogravure and Flexography, EPA-450/2-78-033, December 1978 (Group II).
27. CTG: Control of Volatile Organic Compound Emissions from Large Petroleum Dry Cleaners, EPA-450/3-82-009, September 1982 (Group III).
28. CTG: Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations in SOCMI, November 15, 1993, EPA-450/4-91-031.
29. CTG: Control of Volatile Organic Compound Fugitive Emissions from Synthetic Organic Chemical Polymer and Resin Manufacturing Equipment, EPA-450/3-83-006, March 1984 (Group III).
30. CTG: Control of Volatile Organic Compound Emissions from Manufacture of High-Density Polyethylene, Polypropylene, and Polystyrene Resins, EPA-450/3-83-008, November 1983 (Group III).
31. CTG: Control of Volatile Organic Compound Emissions from Air Oxidation Processes in Synthetic Organic Chemical Manufacturing Industry, EPA-450/3-84-015, December 1984 (Group III).
32. CAA Section 183(f).
33. ACT: Control of Volatile Organic Compound Emissions from Batch Processes, EPA-453/R-93-017, February 1994.
34. ACT Document: Industrial Cleaning Solvents, EPA-453/R-94-015, February 1994.
35. CTG: Control of Volatile Organic Compound Emissions from Offset Lithographic Printing (CTG Draft), EPA-453/D-95-001, September 1993.

36. ACT: Offset Lithographic Printing, EPA-453/R-94-054, June 1994.
37. CTG: Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations in SOCMI, November 15, 1993, EPA-450/4-91-031.
38. ACT: Volatile Organic Liquids Storage in Floating and Fixed Roof Tanks, EPA-453/R-94-001, February 1994.
39. CAA Section 182(b)(2)(C).
40. NESCAUM Stationary Source Committee Recommendation on NO_x RACT for Utility Boilers, 8/12/1992.
41. NESCAUM Stationary Source Committee Recommendation on NO_x RACT for Industrial Boilers, Internal Combustion Engines and Combustion Turbines, 9/18/1992.
42. Controlling Emissions of Nitrogen Oxides from Existing Utility Boilers Under Title I of the Clean Air Act: Options and Recommendations, STAPPA/ALAPCO, 4/27/1992.
43. State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, USEPA, 10/27/1995.
44. Summary of NO_x Control Technologies and their Availability and Extent of Application, USEPA, February 1992.
45. Alternative Control Techniques Document: NO_x Emissions from Process Heaters (Revised), USEPA, September 1993.
46. Alternative Control Techniques Document: NO_x Emissions from Industrial/Commercial/Institutional (ICI) Boilers, USEPA, March 1994
47. Alternative Control Techniques Document: NO_x Emissions from Utility Boilers, USEPA, March 1994.
48. State's Report on Electric Utility Nitrogen Oxides Reduction Technology Options for Application by the Ozone Transport Assessment Group, prepared for the OTAG Control Technology & Options Workgroup by Ken Colburn, 4/11/1996.
49. Status Report on NO_x Controls for Gas Turbines, Cement Kilns, Industrial Boilers, Internal Combustion Engines, NESCAUM, December 2000.
50. Summary of State/Local NO_x Regulations for Stationary Sources, USEPA, 2004.
51. Summary of NO_x Control Technologies and their Availability and Extent of Application, USEPA, February 1992.

52. Summary of NO_x Control Technologies and their Availability and Extent of Application, USEPA February 1992
53. Memorandum subject, Fuel Switching to Meet the Reasonably Available Control Technology (RACT) Requirements for Nitrogen Oxides (NO_x), Michael H. Shapiro, Air and Radiation, 7/30/1993
54. Memorandum subject, Nitrogen Oxides (NO_x) Questions from Ohio EPA, Tom Helms, Chief Ozone/Carbon Monoxide Programs Branch, (no date cited, references 11/30/1993 questions)
55. State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, USEPA.
56. Alternative Control Techniques Document: NO_x Emissions from Stationary Gas Turbines, USEPA, January 1993
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60. Sourcebook: NO_x Control Technology Data, USEPA, July 1991.
61. Memorandum Subject: De Minimis Values for NO_x RACT, from G.T. Helms, Ozone Policy and Strategies Group, dated 1/1/1995.
62. Alternative Control Techniques Document: NO_x Emissions from Iron and Steel Mills, USEPA, September 1994.
63. The “Blue Book,” i.e., “ISSUES RELATED TO VOC REGULATION CUTPOINTS, DEFICIENCIES AND DEVIATIONS, Clarification to Appendix D of November 24, 1987 FEDERAL REGISTER,” dated May 25, 1988

B. Delaware VOC RACT Regulation

Regulation No. 24: CONTROL OF VOLATILE ORGANIC COMPOUND EMISSIONS

http://www.dnrec.state.de.us/air/aqm_page/docs/pdf/reg_24.pdf

(Note: Hard copy of this regulation available upon request.)

C. Delaware NO_x RACT Regulation

Regulation No. 12: CONTROL OF NITROGEN OXIDES EMISSIONS

http://www.dnrec.state.de.us/air/aqm_page/docs/pdf/reg_12.pdf

(Note: Hard copy of this regulation available upon request.)

10 DE Reg. 159 (07/01/06) (General)

Since CO's role in forming ozone is relatively insignificant, the CAA does not specify requirements on CO emission reductions regarding ozone attainment.